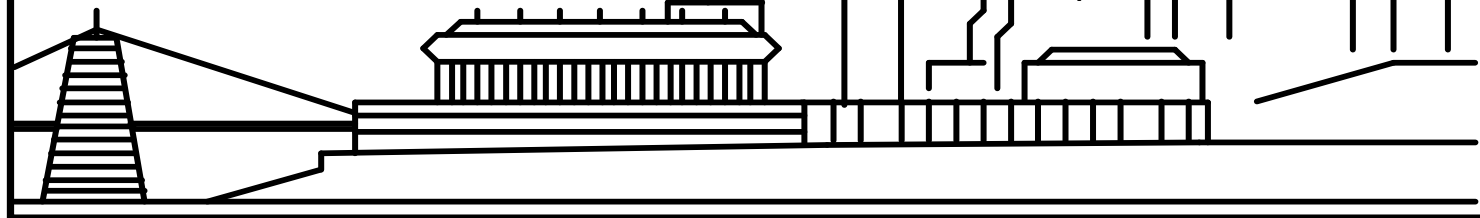




**INSTITUTE OF
ELECTRICAL &
ELECTRONICS
ENGINEERS, INC.**



MAY 1996

IEEE CINCINNATI SECTION NEWSLETTER

MAY MEETING

**Main Topic: What IEEE-USA Is Doing For You (Employment
Benefits, Immigration, Insurance, etc.)**

Also: IEEE Pre-College Education

Award to Dick Reiman

DATE: THURSDAY, MAY 23, 1996

PLACE: Institute of Advanced Manufacturing Sciences (IAMS)
(See map on Pg. 3 for directions)

TIME : 5:30 p.m. (Social Time)
6:00 p.m. (Presentation)
6:45 p.m. (Program)
7:30 p.m. (Adjourn)

Reservations are required for dinner only!

Please call Dee Scott at

385-9446

by NOON, Wed., May 22nd

ABOUT THE MEETING

To all of you who know and have worked with Dick Reiman over the years, please plan to attend this meeting and help pay tribute to Dick. We plan to give him an award immediately after dinner.

Mr. Jim Everly, Region 2 Pre-college Education Chairman and a member of the Cincinnati Section, will give a 15 minute presentation on Pre-College Education. Mr. Everly is an Associate Professor at U.C.'s College of Applied Science.

Mr. George F. McClure's talk will be about the rapidly changing times for U.S. engineers, with technology advances and restructuring both affecting the quality and permanence of engineering careers. IEEE-USA is

concerned with promoting the career and technology policy interests of electrical, electronics, and computer engineers.

After a ten minute IEEE-USA overview videotape, "Engineering A New Millennium," the work of the various committees will be reviewed. Topics of interest will include immigration reform, a health insurance portability bill, and a new presidential initiative to expand the coverage of 401(k) plans by encouraging smaller employers to offer them, and liberalizing tax-deductible contributions to IRAs.

New career views arising from the recent Skills Assessment Workshop and Careers Conference will be summarized, including the effect of concepts such as the "shamrock organization" and the "contingent workforce," both of which place increased emphasis on the individual member to insure career resilience. A question and answer period will follow. If you have any topics you wish Mr. McClure to discuss please call Bill Lohner at 385-7268.

BACKGROUND ON THE SPEAKER

George McClure has a worldwide perspective gained through military service with the U.S. Navy, where he was an operations officer, and through a career in aerospace and communications engineering spanning more than thirty years before his retirement from Martin Marietta in 1993. His last assignment involved a foreign military sale (FMS) program in which he gained familiarity with other cultures through frequent trips to Europe and the Middle East. He was elected an IEEE Fellow for his work in efficient spectrum utilization for mobile communications systems.

He has written a chapter on retirement planning in a new IEEE Press book, *The New Engineer's Guide to Career Growth and Professional Awareness*, and co-editor of the IEEE Press book, *Mobile Communications Systems Engineering*. He is a member of the Board of Governors for the Vehicular Technology Society, whose membership includes about half outside the United States and is chairman of the VTS conference board.

Active in many areas of the IEEE, he is currently chairman of the Career Policy Council, editor for the Technical Policy Council, a member of the Communication Committee and chairman of the Individual Benefits and Services Committee which is working to expand member benefits globally under the Financial Advantage program.

Chairman's Message

By Steve Olenick

The Section has sponsored George McClure, a national expert on PACE activities, as the featured speaker for the May 23rd meeting. George is prepared to answer questions from the audience on a variety of IEEE PACE activities. More details are included elsewhere in this newsletter. A short presentation on the status of the CE Homepage will also be made by Jim Everly.

At the meeting, the Section will take time to honor Dick Reiman, who is retiring as historian. We all appreciate Dick for his years of outstanding, dedicated service and contributions to the IEEE. Dick will, however, continue to write for the newsletter. I would personally like to thank Dick for all of his unselfish help whenever I needed it.

Future events include the annual Golf outing in June, a tour of the waterworks in September and new developments in Personal Communications Systems in October.

If you have any suggestions for technical meetings, please contact me at 513-573-6555 or e-mail me at SOLENICK@CINELE.COM.

THE INVENTION OF ENIAC

by R. J. Reiman, Historian

ENIAC was completed in November 1945, 3 months after the surrender of the Japanese in WWII, 200% over the budget of \$250,000. So why was it important? It did help detect design flaws in the design of the Hydrogen bomb, but mainly it initiated the computer industry.

How was it invented? The Moore School of Electrical Engineering of the University of Pennsylvania had developed a differential analyzer for the Army Ordinance which was interested in an advanced calculator which could compute ballistic firing tables for gunners to aim their weapons. With onset of WWII, humans computing tables using calculators were falling badly behind the demand. John W. Mauchly, a 35-year-old assistant professor at the Moore School, had proposed the construction of an electronic calculator consisting of vacuum tubes pulsing at the rate of 100,000 beats a second, which could do 1,000 multiplications per second, or compute a single trajectory in 100 seconds. The Ordinance Department was interested.

Mauchly had developed the design concept of a digital calculator from work done by John V. Atanasoff of Iowa State College who had designed and built an electronic calculator which used binary math and Boolean algebra. Arithmetic units employed vacuum tubes and the memory was composed of capacitors for the purpose of storing charges. Input and output was by punch cards. Atanasoff, assisted by Clifford Berry, had later completed the ABC calculator in 1942, but had instructed their patent attorney, Richard R. Trexler to file for a patent in 1941. WWII began in December 1941, the patent was never filed, and the inventors abandoned their efforts. Atanasoff's work lived on through Mauchly who had learned of the details from contacts with Atanasoff from December 1940 to September 1941.

Mauchly was joined by J. Presper Eckert Jr. at Moore and Eckert suggested changes in the design of ENIAC by devising a flip-flop circuit using twenty vacuum tubes for the accumulator. ENIAC was to retain Atanasoff's idea of vacuum tubes as switches and the synchronizing of internal operations with an electronic timer. Vacuum tubes, however, were used for the memory instead of capacitors. Two of Atanasoff's best ideas, the use of binary math and Boolean logic, unfortunately would wait for future machines and their absence made ENIAC unnecessarily complicated.

Project PX, as the military classified ENIAC, started in June 1943. The project team was under terrific pressure to complete their work since the demand for firing tables was increasing. By June 1944, the first two accumulators were completed and were a success. Their number was to be increased from 4 to 20, which extended the time to complete, but made ENIAC considerably more powerful. The fragility of the vacuum tubes were the weakest link in the design and ENIAC had 20,000 of them. Eckert ran them well below their rated voltage and he did extensive testing beforehand to weed out the weak tubes. It took about a year and a half to design ENIAC and a year to build it. ENIAC would initiate the computer industry.

A MESSAGE FROM YOUR PACE CHAIRMAN

by Bill Lohner

"A Network of Professional Activities for Engineers"

The Cincinnati Section is very fortunate month to have an excellent program including a presentation by Mr. George McClure who is currently Chairman of the IEEE Career Policy Council, editor for the Technical Policy Council and member of the Communication Committee.

Also for those of you have sons and daughters in high school, Mr. Jim Everly, Region 2 Pre-College Education Chairman, will give a short presentation (15 minutes) on pre-college education. This is your chance to obtain

some information as well as ask some questions on this topic. Jim Everly is an Associate Professor at U.C.'s College of Applied Science.

Third, but not least, first on our program will be an award presentation to Mr. Dick Reiman who is retiring from the Cincinnati IEEE Executive Committee. Dick will continue to serve as our "Historian" and his interesting articles will continue to appear in the Section newsletter. Dick has served the Section as Chairman, Vice-Chairman as well as other offices and on various Section Committees. Dick has been active in the Section as long as I can remember, at least 30 or 40 years. So attend this Section meeting if you can. The Section will miss Dick's input. Thanks Dick for a job well done.

To digress on the topics of our main speaker Mr. George McClure, this is the time for Section members to present their questions on IEEE policies or support on such topics as immigration reform, health insurance portability, 401 K's, tax deductible contributions to IRA's, "downsizing" and career resilience.

As you can see this promises to be a very informative meeting. If you want Mr. McClure to discuss a particular topic, please call me..

Bill Lohner
PACE Chairman
Cincinnati Section IEEE
Phone 385-7268

IEEE NEWS

IEEE RELEASES IEEE/IEE ELECTRONIC LIBRARY ON CD-ROM

Piscataway, NJ -- February 19, 1996 -- The IEEE is pleased to announce the release of a new full-image, CD-ROM database called the IEEE/IEE Electronic Library (IEL). The product contains full-page images of the entire collection of IEEE/IEE publications, including over 10,000 journal and magazine issues, transactions, conference proceedings, standards and colloquia published since 1988. This is the core collection of published information in electrical and electronic engineering and computer science. Researchers and librarians can search the index, a subset of the INSPEC Database produced by the Institute of Electrical Engineers (IEE), then display and print the full page image, including all charts, graphs, diagrams, photographs and illustrative material found in the original publication.

"The easy-to-use search interface combined with instant access to the document images offers researchers and librarians a single source for obtaining high - quality, technical information," said Tony Ferraro, Staff Executive, Publishing, IEEE. "It is our goal, as an engineering and computing membership association, to offer our members and customers state-of-the-art technology for accessing the information they need in the most convenient and cost-effective way."

The Windows© search interface for the IEL has been developed through an agreement with Sony Electronics Publishing Company. IEEE chose Verity Topic® Agents and Adobe Acrobat software as the foundation of the end-user system. The Topic search engine integrated with Adobe Acrobat provides an ideal solution for searching bibliographic data and accessing image data via CD-ROM.

The IEL search engine allows users to search the full-text of the bibliographic record, including the complete abstract, or target particular elements such as title, author, and affiliation. Researchers can construct simple or

complex searches using any of the Verity search functions and incorporate terms from the customized IEL thesaurus. In addition, users can browse the contents of the database using Verity's unique Periodical Browser. The Periodical Browser uses the point-and-click functionality to easily navigate the many publication titles available.

The 1996 subscription to IEL includes a backfile of approximately 200 images and index CD-ROM's licensed for a stand-alone workstation. Subscribers will receive monthly updates to the database including new issues, proceedings and standards published since the last update. Search and retrieval software, complete user documentation, comprehensive on-line help, and professional technical support are also provided. Print subscriptions to the IEEE All-Society Periodicals Package, IEL Electronics Letters, and IEL Proceedings, as well as subscribers to the Prepaid and Standing Order Plans for conference proceedings, qualify for discounts up to 45% on IEL.

Sales and technical support is provided by Information Handling Services, Inc. (IHS) based in Englewood, Colorado. A leading supplier of technical information services for over 35 years, the company has sales and technical support representatives in 80 countries worldwide. Individuals interested in the IEL can contact IHS at (800) 716-3447 in the U.S or (303) 397-2506.

The IEEE collection has been offered since 1992 under the name IEEE/IEE Publications Ondisc (IPO), produced and distributed by UMI Company. IEEE has assumed responsibility for the image production, interface development, sales and distribution for the Electronic Library. UMI will continue to produce IPO for current subscribers throughout 1996; however, subscribers will be able to transition to IEL at the end of their current subscription term.

The Institute of Electrical Engineers (IEL), headquartered in the United Kingdom, is the largest professional engineering society in Europe with over 135,000 members in all aspects of electrical, electronic and manufacturing science and engineering. In addition to a full range of professional journals, magazines, conferences and books, the IEE produces the INSPEC database, the world's largest bibliographic reference service in the field of physics, electrical engineering and computing.

IEEE INTRODUCES CAREER MANAGEMENT AND PLANNING GUIDE

Piscataway, NJ -- March, 1996 -- A new guide to help engineers maintain viable careers in today's rapidly changing technical environment is available from the IEEE. Called the IEEE Career Asset Manager (CAM), the comprehensive career management and planning program provides a structured approach for defining personal career goals, preparing a professional development plan, and maintaining records for resume generation and job searches.

The three-part program features numerous tips on how to prepare for improvement and change. the first section, CAMINFO, contains information on licensing and certification, careers options, tactics for dealing with corporate downsizing, and strategies for maintaining technical vitality. It also highlights the value of life-long learning and the role of the professional organization in fostering professional growth. The second section, CAMINDEX, helps the user to keep records of professional training and education. It also provides a format for rapidly generating up-to-date resumes. In the third section, CAMPLAN, the program offers a step-by-step process to design a professional development plan through self-evaluation and goal-setting exercises.

The Career Asset Manager also includes a basis for measuring career growth and contains information on other IEEE resources for career planning. The program is available in a loose-leaf format. A software edition will be offered in 1997.

IEEE-USA COMMITTEES CONVERGE, COLLABORATE ON SERVING MEMBER NEEDS

In an effort to streamline committee activities and better serve our U.S. members, three of IEEE-USA's committees met in San Diego over the March 2-3 weekend to discuss and integrate their activities. Members of IEEE-USA's Career Maintenance and Development, Career Equality and Work Force Committees were present, as well as a representative from the IEEE's Educational Activities Board.

According to George McClure, chair of IEEE-USA's Career Policy Council (CPC), bringing these policy boards together in an interactive meeting series permits committee members "to seize opportunities for collaboration and take immediate action." After individual committee meetings on March 1, the three groups converged and committee chairs introduced their members and provided an overview of activities. On March 2, the committees met jointly and arranged in small groups to brainstorm and develop integrated action items.

Members discussed ways of combining their resources for greater impact, including sharing rosters and meeting synopses, joint lobbying endeavors, and linking and expanding World Wide Web sites. The group agreed that collaborative meetings will help to safeguard against isolation and that these ideas exchanges are crucial to improving their productivity. CPC Vice Chair Paul J. Kostek, who organized these meetings last year and advocates them as an annual event, explained that "we are striving for awareness -- helping committee members become better aware of what they and other committees are doing to better serve members' needs."

Committee members rallied around a June 24 career focus series planned in conjunction with the ICC '96 conference in Dallas. Series organizer LeEarl Ann Bryant has capitalized on this effort for committee cooperation and recruited members of various IEEE committees to participate. Company representatives from Texas Instruments, Aerospace Corporation and Dallas Semiconductor will make presentations on employment diversity and compensation trends. Although held in conjunction with ICC '96, this session is being offered free of charge.

Members also focused on IEEE-USA's Careers Conference, to be held April 11-12 in Minneapolis. Conference Chair Peggy G. Hutcheson emphasized that this conference will benefit anyone interested in or responsible for developing engineers' careers. "This is the premiere conference focusing on today's engineers' career issues," Hutcheson noted.

PENTAGON ELECTRIC-POWER PROCUREMENT REFORM FALTERS

According to the current issue of the IEEE-USA LEGISLATIVE REPORT, the 1996 Defense Authorization Bill signed Feb. 10 by President Clinton calls for continued procurement reform but stops short of addressing the manner in which the Defense Department procures electricity, a provision that was included in an earlier version of the bill. The provision would have allowed the Pentagon to shop around for economical sources of electric power, rather than conform with state laws which require purchase of that energy from franchised utility companies. A House report claimed the change could reduce Defense's \$1.9 billion electric bill by 20%.

Instead, new language calls for simplified procedures to streamline the process of procuring commercial products and services "while preserving the requirement for full and open competition." Concurrently, a coalition of utility companies, working with the Pentagon, has proposed a private, non-profit corporation that would act as an optional procurement resource for the Defense Department and enable installation managers to "seek out the most competitive private-sector proposals" to undertake a broad infrastructure-modernization effort.

Although the Clinton Administration has endorsed the latter effort, its Office of Management and Budget (OMB) emphasizes that the coalition's proposal would not effect electric-power procurement. According to

OMB: "The Administration is opposed to any provision permitting electricity sales to Federal agencies that preempts or circumvents state laws and regulations. ...These provisions would establish special treatment of the government with respect to other electricity customers and undermine efforts to reach comprehensive resolution of the utility stranded-cost issue."

Meanwhile, Senate and House committees are beginning hearings on the merits of a federal role in utility deregulation. In addition, Sen. J. Bennett Johnston, D-La., has introduced the Electricity Competition Act of 1996 (S.1526), which would abet state deregulation efforts while allowing for stranded-cost recovery by utilities.

In a recent position statement, IEEE-USA cautioned that any major change in public energy policy must demonstrate that the benefits "will more than offset the costs or any risks to the integrity and reliability of the nation's electric-power supply." The statement added, "To do this, it is imperative that the technical expertise of the engineering profession be fully utilized."

For a copy of the statement, "The Role of Engineers in Formulating Electric-Power Policy," contact IEEE-USA at 202-785-0017 or <ieeusa@ieee.org>. For a more extensive analysis of the military electric-power procurement debate, contained in the December 1995 and March 1996 issues of the IEEE-USA LEGISLATIVE REPORT, contact IEEE-USA's Sharon Richardson at 202-785-0017, ext. 326, or <s.richardson@ieee.org>.

IEEE SELECTS 1996 WISE INTERNS

Two IEEE student members, Tee Wee Ang (University of Denver) and Edward Cheng (Princeton University) have been selected by IEEE-USA to participate in the prestigious Washington Internships for Students of Engineering (WISE). Ranked by the Princeton Review as one of the hundred best internships in the U.S., WISE Interns spend ten weeks in Washington during the summer meeting with government officials, learning how technology-related public policy is made, and preparing a research paper on a specific policy issue.

Ang, who is working towards a BS degree in Electrical Engineering and an MS degree in Business Administration, is active in student government and international student organizations at the University of Denver. He hopes to focus his WISE research on public policy issues related to the development of space technology. Cheng is also working towards his BSEE with a certificate in Public Affairs. As a research topic, he expects to study regulation of the information superhighway, including a focus on policy issues related to computer fraud and piracy.

Each year, IEEE-USA and IEEE's Technical Activities Board jointly sponsor two WISE Interns. Applications for WISE Internships during Summer 1997 will be sought this Fall. For more information, contact IEEE-USA's Chris Brantley at 202-783-0017, ext. 303, or browse IEEE-USA's WISE page at <http://www.ieee.org/usab/DOCUMENTS/CAREER/STUDENT_SERVICES/OTHER_FILES/internship.html>.

U.S. ENGINEERS TELL IEEE-USA THEY WANT CAREER SUPPORT

Several hundred U.S. engineers responded to an informal survey on professional activities contained in an IEEE-USA ad appearing in January or February issues of IEEE SPECTRUM, ELECTRONIC ENGINEERING TIMES and IEEE COMPUTER magazines. of 626 responses received, 48% indicated career support as the most important service that IEEE-USA could provide for engineers, while 31% chose enhancement of the engineering profession and 21% the shaping of technology policy.

The ad spread, titled "Since Everyone Else is Looking Out for #1, We're Looking Out for You." described IEEE-USA's work to support the career and technology-policy interests of U.S. engineers. In addition to

responding to the survey question, readers could request information on IEEE-USA's popular Internet job-listing service and free copies of its new electrotechnology consultants' directory. For a brochure outlining IEEE-USA's activities and services, contact the organization's Washington office at 202-785-0017 or <ieeusa@ieee.org>.

IEEE-USA WEB UPDATE: GIVE POLICY-MAKERS A PIECE OF YOUR MIND THROUGH IEEE-USA'S NEW *WEB EXTRA*

* Do you think computer programming languages should be protected by copyright?

* Should third-party Internet providers be held liable for illegal acts committed by their subscribers?

How these questions are answered by policy-makers could have a significant impact on how we, as engineers, do business. IEEE-USA's Intellectual Property Committee would like your input as it formulates its advice for Congressional legislators considering important new legislation this year.

Check out the first *WEB EXTRA* edition of IEEE-USA PROFESSIONAL PERSPECTIVE at <<http://www.ieee.org/usab/>>. There you'll find the "Surfer Survey" on cyberspace intellectual-property issues, as well as updates on recent events in Washington and on Capitol Hill, and other articles on issues affecting our professional lives. Take a few moments to check out the *WEB EXTRA* and give IEEE-USA your opinion on today's "hot-button" issues for engineers.

'YOUNG ENGINEERS FORUM' INTERACTIVE SATELLITE BROADCAST WILL GIVE 'REAL-LIFE' CAREER ADVICE

A free live, interactive satellite broadcast will provide young professionals with first-hand advice on career issues from real-world experts. "Young Engineers Forum," jointly sponsored by IEEE, ASME, AIChE and ASCE, will air on Wed., April 24, 5:30-9 p.m., EDT.

Stuart Levy, chair of IEEE-USA's Alliance of IEEE Consultants' Networks, will give a presentation on "Engineers for Hire," describing how to set up an independent consulting practice. Other segments will cover employment in small companies, entrepreneurship, continuing education, career changes, and developing non-technical competencies. Viewers will be able to call or fax questions to speakers from their remote sites during the broadcast.

To register your Section, contact ASME at 800-843-2763 or <infocentral@asme.org>. For sites without C-Band satellite-reception capabilities, a VHS videotape of the program can be ordered for \$49.95.

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